

This Page Is Inserted by IFW Operations
and is not a part of the Official Record

BEST AVAILABLE IMAGES

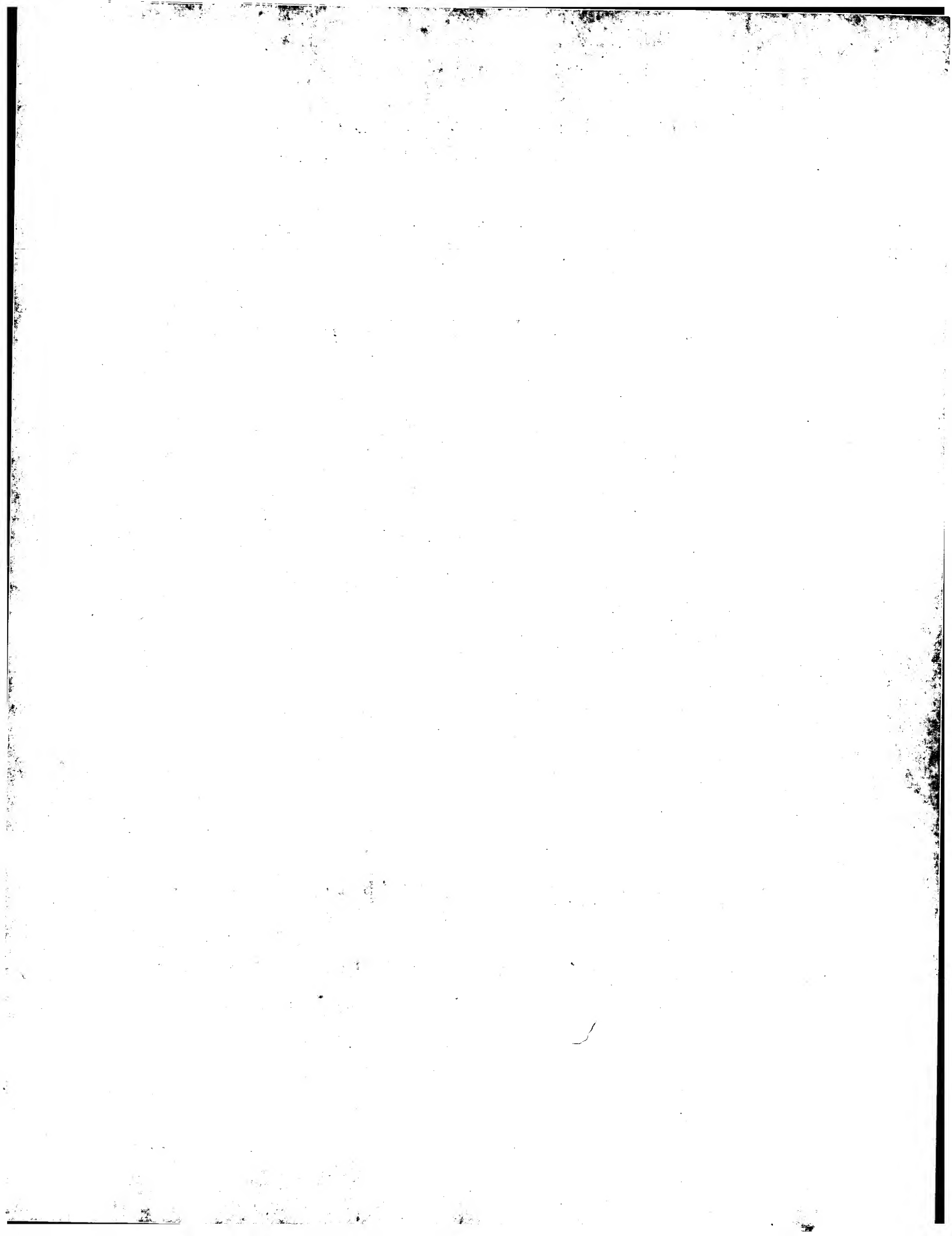
Defective images within this document are accurate representations of the original documents submitted by the applicant.

Defects in the images may include (but are not limited to):

- BLACK BORDERS
- TEXT CUT OFF AT TOP, BOTTOM OR SIDES
- FADED TEXT
- ILLEGIBLE TEXT
- SKEWED/SLANTED IMAGES
- COLORED PHOTOS
- BLACK OR VERY BLACK AND WHITE DARK PHOTOS
- GRAY SCALE DOCUMENTS

IMAGES ARE BEST AVAILABLE COPY.

**As rescanning documents *will not* correct images,
please do not report the images to the
Image Problem Mailbox.**



PATENT SPECIFICATION

745,094

Inventor :—CLARENCE WILLANS HEATH.



Date of filing Complete Specification : Aug. 4, 1954.

Application Date : Aug. 17, 1953. No. 22635/53.

Complete Specification Published : Feb. 22, 1956.

Index at Acceptance :—Class 38(1), E3A(1 : 2 : 13), E3B6, E3C2(A : B : C), E3D2.

COMPLETE SPECIFICATION.

Improvements in and relating to Electrical Socket Contacts.

We, CARR FASTENER COMPANY LIMITED, a British Company, of Pinfold Lane, Stapleford, Nottinghamshire, do hereby declare the invention for which we pray that a patent may be granted to us, and the method by which it is to be performed to be particularly described in and by the following statement :—

This invention relates to electrical socket contacts of the kind comprising a pair of nested members each having a series of resilient arms the free ends of which define a slot to receive a contact blade which is adapted to be resiliently engaged by the said free ends of the arms.

It is an object of the present invention to provide an improved form of contact of this kind.

According to the present invention an electrical socket contact comprises a pair of complementary sleeve like members each comprising a body portion having a series of longitudinally spaced resilient arms extending laterally from opposite sides, one of said sleeve like members being nested within the other in such a manner that the resilient arms of the two members are in overlapping alignment with their free ends defining a slot into which a contact blade is adapted to be inserted and resiliently engaged by the free ends of said arms, the said body of each member being provided with an axial extension, said extensions being arranged in overlapping abutment and being secured by upsetting the metal of said extensions, for example, by a punching, stamping or cutting operation.

To enable the invention to be fully understood it will now be described with reference to the accompanying drawing, in which :—

Fig. 1 is a front view of an electrical contact according to one embodiment of the invention ;

Fig. 2 is a side view thereof ;

[Price 3s. 0d.]

Fig. 3 is a plan view of Fig. 1, showing in dot dash lines a blade contact positioned between the free ends of the resilient arms ;

Fig. 4 is a plan view of a contact assembly including contacts as illustrated in Figs. 1 to 3 ;

Fig. 5 is a section on the line 5—5 of Fig. 6 ; and

Fig. 6 is an underplan view of the assembly illustrated in Fig. 5.

As shown in the accompanying drawing the contact includes two complementary metal members assembled in nested relation. The outer member *a* includes a body portion 1 formed with a series of resilient arms 2 extending laterally from opposite side edges, the arms being arranged in aligned pairs, the pairs being parallel to one another and spaced longitudinally of the body. The arms are curved to arcuate shape so that the series of arms form in effect a substantially cylindrical sleeve-like member having an axially extending slot *c* defined by the free ends 3 of the arms. The body 1 is also formed with an integral extension or tail 4, cut to form a tongue 5*a* of rectangular shape which is adapted to be bent out of the plane of the extension as indicated in Fig. 2.

The inner member *b* of the contact is of substantially similar shape to the member *a*, but is of slightly smaller all round dimensions and includes a body portion 1*a*, laterally extending resilient arms 2*a* bent to arcuate shape to form a substantially cylindrical sleeve like portion which is eccentrically disposed within the sleeve like portion of the outer member *a*. As shown the inner member has an integral extension or tail piece 4*a* similar to the tail piece 4 of the outer member and is also cut to provide a tongue 5*a*.

It will be noted that the two complementary members are nested together in such a manner that the body portions 1, 1*a* and the arms 2, 2*a* are positioned in parallel relation so that in the view illustrated in Figs. 1 and 2

Price 4s 6d.

the arms of the inner member are disposed behind the arms of the outer member. As illustrated more particularly in Fig. 2 the tongue 5a of the inner member extends through the hole from which the tongue 5 of the outer member is formed. It is well known that on punching out a tongue, the hole which is left behind is always smaller than the portion which is punched out, consequently, the tongue 5a of the inner member will grip the walls of the hole left by the punching out of tongue 5 of the outer member and thus will retain the two members in juxtaposition. If the tongues are punched out when the two members are assembled in position the upsetting of the metal adjacent the root of the tongues will further assure the locking of the two members.

It will be understood that the members a, b may be secured by other means, for example, by punching or stamping the overlapping portions of the tail pieces 4, 4a. If desired, the said extensions may be subjected to an embossing or like operation, whereby part of the surface of one of the tail pieces is pressed into an indentation in the other.

In Figs. 4 to 6 the electrical contact is shown mounted in a base of insulating material 6 having a series of bores whose opposite ends open on to the opposite surfaces 7, 8 of the base. As shown, each bore includes a substantially cylindrical portion 9 in which the nested sleeve like portions of the members are positioned, and an offset extension 10 which opens into the portion 9 adjacent to the slot c defined by the free ends of the arms 2, 2a. A blade like contact such as indicated by 11 in Fig. 3 is adapted to be inserted into the extension 10 so as to extend into the slot c, and to be engaged by the ends of the resilient arms 2, 2a. The ends of the bores which open on to the face 8 of the base member 6 comprise slots through which the extensions or tail pieces 4, 4a project, and the tongues 5, 5a which have their free ends directed towards the arms 2, 2a, are sufficiently resilient to snap behind the portions of the face 8 adjacent to the ends of the bores so as to secure the contacts in assembly.

As shown the contacts are arranged in three rows with the bores in one row staggered relatively to the bores in the adjacent rows. It will be noted that the extensions 10 of the bores in each row are parallel but are angularly displaced with respect to the extensions in the adjacent rows. This provides a staggered arrangement which spaces the blade contacts when these are assembled with the contact members.

As more particularly illustrated in Fig. 6 the face 8 of the base 6 is formed with a series of intersecting upstanding integral ribs 12 which serves to isolate the adjacent ends of the bores and also to isolate the parts of the tail pieces which project therethrough.

What we claim is:—

1. An electrical socket contact comprising a pair of complementary sleeve like members each comprising a body portion having a series of longitudinally spaced resilient arms extending laterally from opposite side edges, one of said sleeve like members being nested within the other in such a manner that the resilient arms of the two members are in overlapping alignment with their free ends defining a slot into which a contact blade is adapted to be inserted and resiliently engaged by said arms, the body portion of each member being provided with an axially disposed extension, said extensions being arranged in overlapping abutment and being secured by upsetting the metal of said extensions, for example, by a punching, stamping or cutting operation.

2. An electrical contact according to Claim 1 wherein the resilient arms of one of the pair of members are disposed eccentrically with respect to the arms of the other member.

3. An electrical contact according to Claim 1 wherein parts of said extensions are cut and bent to form overlapping tongues which are bent out of the plane of the extensions to secure the latter together.

4. An electrical contact according to Claim 3 wherein said tongues are formed with their free ends directed towards the resilient arms but spaced therefrom to provide means for snapping engagement with a support.

5. An electrical contact assembly comprising a base of insulating material formed with a series of contact receiving bores whose opposite ends open on to the opposite faces of said base, a contact as claimed in Claim 1 being mounted in each of said bores and a series of integral ridges being provided projecting from one of said faces of the base and serving to isolate the open ends of adjacent bores from one another.

6. An electrical contact assembly according to Claim 5 wherein said bores are arranged in rows, the bores of one row being staggered relative to the bores of an adjacent row.

7. An electrical contact assembly according to Claim 6 wherein each bore includes a cylindrical portion in which the nested sleeve like members are located and an offset extension aligned with the slot defined by the free ends of said resilient arms, the offset extensions of one row of bores being parallel to one another but angularly displaced with respect to the extensions of an adjacent row of bores.

8. An electrical socket contact including two nested members substantially as described with reference to the accompanying drawing.

ABEL & IMRAY,
Agents for the Applicants,
Quality House, Quality Court,
Chancery Lane, London, W.C.2.

PROVISIONAL SPECIFICATION.

Improvements in and relating to Electrical Socket Contacts.

We, CARR FASTENER COMPANY LIMITED, a British Company, of Pinfold Lane, Stapleford, Nottinghamshire, do hereby declare this invention to be described in the following statement:—

This invention relates to electrical contacts of the kind comprising a socket like member formed by a pair of nested tubes or sleeves shaped to provide a series of opposed resilient arms, the free ends of which are adapted resiliently to engage with an inserted contact of blade or plate like form.

It is an object of the invention to provide an improved form of contact of this kind and more particularly improved means for securing nested tubes or sleeves together. It is a further object of the invention to provide means whereby the contacts may be correctly secured in assembled position on a supporting panel or the like.

According to the present invention an electrical contact comprises two complementary metal parts each comprising a body portion formed with a series of integral resilient arms extending laterally from opposite sides and spaced longitudinally of the body whereby the body and arms of each part constitute a slotted sleeve or tube. The two complementary parts are assembled one within the other with the body of the inner in abutment with the body of the outer so that the arms of one part are located eccentrically with respect to the arms of the other. The body parts of the two parts are provided with axially disposed extensions arranged in overlapping abutment and secured together by upsetting the metal of the extensions, for example by punching, stamping or cutting.

The upsetting operation may comprise cutting or punching out a tongue from the surfaces of the extensions, the tongue being bent to project outwardly with its free end directed towards the body portions of the parts.

Alternatively the extensions may be subjected to a punching or like operation to form embossments in the two parts whereby part of the surface of one part will be pressed into the surface of the other.

According to one particular embodiment of the invention an electrical contact comprises an outer part comprising a body formed with four integral resilient arms extending laterally from opposite sides of the body to form a tube of sleeve like form, the arms being spaced longitudinally of the body and arranged to form four aligned pairs. The lower end of the body is provided with an

integral extension or tail piece. An inner part is also provided formed in substantially the same manner as the outer part but the dimensions of the body and arms will be slightly less than those of the outer part so that it can be readily nested within the latter.

When in nested position the outer surface of the body of the inner part will be in abutment with the inner surface of the body of the outer part, the respective pairs of arms on the respective bodies being in alignment but defining eccentrically positioned tube or sleeve like portions. The extensions or tail pieces are disposed in overlapping abutment and a tongue is punched through the two extensions and serves to secure the two parts in assembly.

The free ends of the respective pairs of arms extend towards one another and are disposed to define a gap extending axially of the body, a blade or plate like contact being adapted to be inserted into the gap so as to make frictional and electrical engagement with the adjacent ends of the arms of both said parts. Accordingly there is provided a multi-point contact but which by reason of the longitudinal spacing of the pairs of arms provides an efficient mechanical and electrical engagement with the inserted blade or plate, but without undue friction being set up as would make it difficult to insert or withdraw a blade or plate.

It will be understood that the metal of the extensions or tail pieces may be upset in other ways than punching out a tongue, for example, the tail pieces may be punched to indent nested boss portions in the tailpieces or the tailpieces may be corrugated, curved or otherwise upset.

When the tailpieces are provided with a projecting tongue it is preferred that the free end of the tongue is directed towards the body. With this arrangement the tongue is adapted to serve as a means for securing the contact in an apertured support. In this case, as the tailpiece is inserted into an aperture in a support the tongue will be flexed inwardly, and being resilient will then tend to snap outwardly to engage the under face of the support adjacent to the aperture. The pair of arms nearest to the tongue may be adapted to rest on the upper surface of the support and accordingly the contact will be secured in assembly with the support by the arms engaging one face and the tongue the other face thereof.

If desired, the support on which the contact is to be mounted, may be made of

- resilient conducting material, such as poly-
thene, and in this case, if the tailpieces are
attached by embossments, these will also
serve to secure the contact in a manner
5 similar to the tongue described above, as the
resilient nature of the support will permit the
embossments to be snapped through the
aperture in the support.
- 10 If desired, the contacts may be dipped in a
bath of hot solder or tin before or after
assembly on the support.
- The contacts according to the present in-
- vention are particularly adapted for use in a
contact assembly panel wherein a series of
contacts such as described are mounted in 15
apertures on a panel or the like and are each
adapted to receive blades, plates or like
contacts mounted on another panel or like
member.

ABEL & IMRAY,
Agents for the Applicants,
Quality House, Quality Court,
Chancery Lane, London, W.C.2.

Abingdon: Printed for Her Majesty's Stationery Office, by Burgess & Son (Abingdon), Ltd.—1956.
Published at The Patent Office, 25, Southampton Buildings, London, W.C.2
from which copies may be obtained.

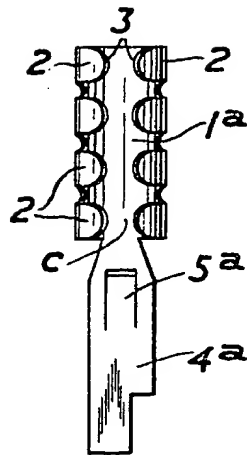


FIG. 1.

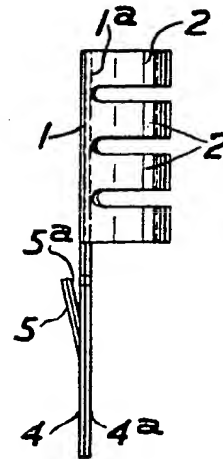


FIG. 2.

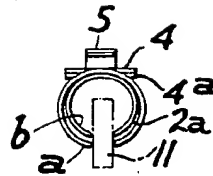


FIG. 3.

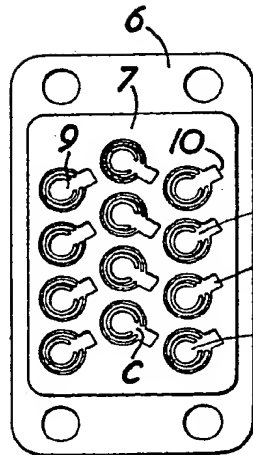


FIG. 4.

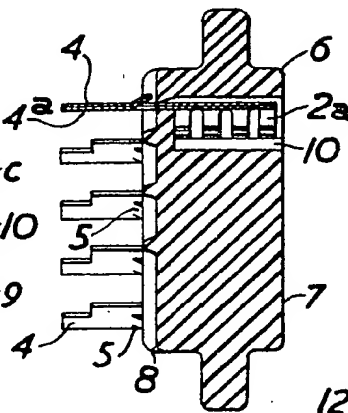


FIG. 5.

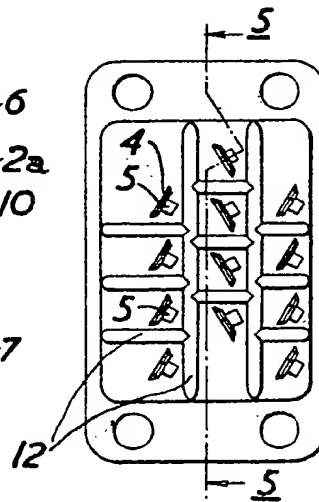


FIG. 6.

